Bird Population Monitoring Programme Count Report

Project title: Bird Population Monitoring in Botswana: Involving citizens in biodiversity monitoring

Cardinal Woodpecker, by Warwick Tarboton

Implemented by: BirdLife Botswana in Partnership with the Department of Wildlife and National Parks (DWNP) and the Department of Environmental Affairs (DEA)

Sponsored by:

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Introduction

The BPM Programme connects people with nature and birding. Being part of the programme provides the chance to enjoy the contribution made to conserve the environment as well as the opportunity to interact with the environment and learn more from it. BirdLife Botswana is thrilled by the amount of work done by citizen scientists pledging their valuable time to provide bird data annually. Their devotion is well quantified by the availability of bird data set accumulated over the last four years of the BPM.

If one looks back and remember when the BPM Programme was established and when counters were told that '*once they become part of the Programme, you are expected to pledge long time commitment to ensure the sustainability of the programme*' the majority of the counters were often overwhelmed by that expectation. Some questions were anxiously asked, such as 'when shall we see the bird counts results giving us the purpose for waking up early twice a year to count birds?' The answer to this question has been 'after five or 10 years' and this seemed a disappointing answer to some. The BPM is now approaching its fifth year (2015) and the volunteers are still going strong and have maintained their loyalty to support the ongoing health of the Programme. This has proved that they are really interested in environmental preservation and are willing to invest their time and energy to defend nature and have always done it with a sincere and total commitment. The impact of their devotion on the results we are able to get, in terms of conservation, is dramatic. We thank you from the bottom of our hearts!

For the BMP Programme to keep growing volunteers need to also understand that monitoring is a simple step on from a survey, in that by undertaking repeated surveys we can estimate the population trend of a particular species over time, and consistency of method is crucial to measure genuine population estimate fluctuations. If a monitoring program is well designed, it can be a research tool in its own right providing that suitable environmental data which provide early pointers towards the underlying causes of trends in species numbers. This report analyses a data for four years about the index of the common species and two problematic species, the Red billed Quelea and the Common Myna in Botswana.

Happy reading!
Keddy Moleofi, BPM Coordinator

Acknowledgements

BirdLife Botswana would like to thank all those who are participating in the Bird Population Monitoring Programme for their dedication to this programme. A big thank you goes to all those who assisted by mobilising the participation of volunteers in their area, more especially the involvement of Community Based Organisations (CBOs). The organisation looks forward to continued support in the upcoming counts particularly the November 2014 count. Acknowledgements are due to the financial sponsors of this programme, the Royal Society for the Protection of Birds (RSPB) and Debswana, Orapa Letlhakane and Damtshaa mines and the collaborating partners the Department of Wildlife and National Parks (DWNP) and the Department of Environmental Affairs (DEA).

Index for Pied Crow, Yellow-billed Kite, Sabota Lark and Southern Masked-Weaver

The BPM programme will develop a Wild Bird Index (WBI) for Botswana, showing bird population trends over time and using these trends to set conservation priorities, to report on biodiversity changes (contributing to country, continent-wide and global monitoring efforts). The figures below present preliminary analysis to demonstrate how these objectives would be accomplished by the programme in the long run. The WBI is defined as a tool that measures average population trends of a suite of representative wild birds, as an indicator of the general health of the wider environment or the ecosystem. The figure below shows fluctuations of numbers recorded for the species shown below[1].

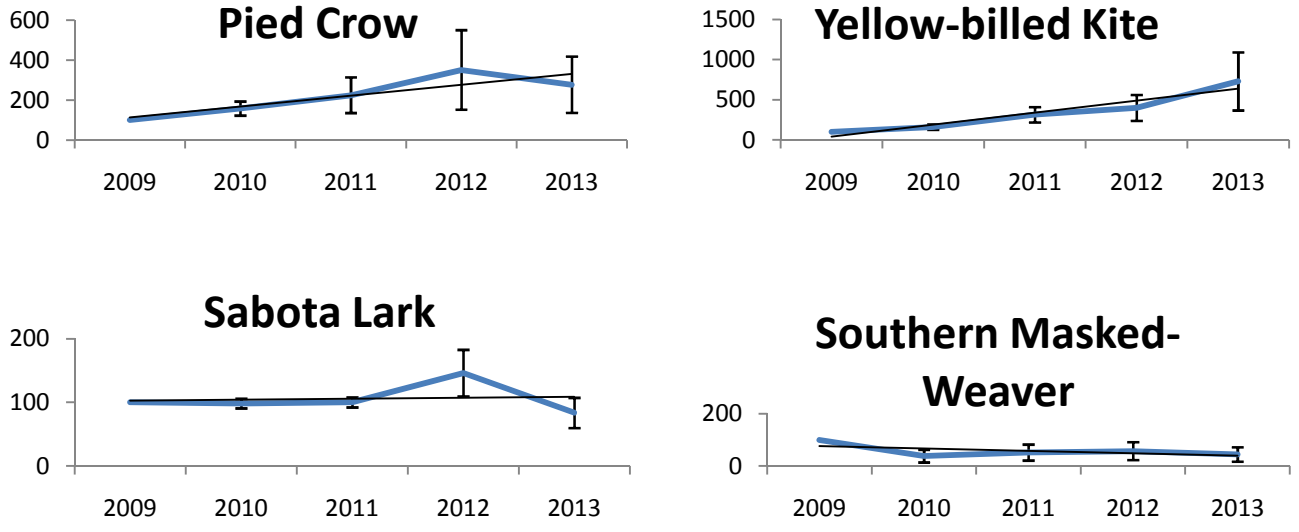

Figure 1. Index for Pied Crow, Yellow-billed Kite, Sabota Lark and Southern Masked-Weaver

Vultures in decline

For the past four years there has been reports and awareness campaigns on vultures of Africa being in decline due to many reasons including electrocutions, hunting, and medicinal use. Botswana has not been spared, at it appears that the major cause of the vulture decline in Botswana is poisoning. Vulture poisoning has been happening as a result of farmers unlawfully poisoning carcasses of their dead animal with an intention to kill problem animal (e.g. jackal, hyena or lion) that killed their livestock and the end results is killing of vultures as they scavenge on the poisoned carcasses. Poachers also poison animal carcass with an intention to kill vultures to avoid being spotted during their illegal acts. BirdLife Botswana has launched the "*I want Botswana Vultures ALIVE not DEAD*" campaign with the aim to increase public awareness on vultures decline. In an effort to assist this campaign we share below the handful vulture records from 2010 to February 2014. Data pooled from the BPM Programme shows that the White-backed Vulture is the most frequently-encountered species, whereas there has been no record for the Egyptian Vulture, and only three records for the White-headed Vulture (Table 1). BPM participants are urged to assist vulture conservation by spreading the word to sensitize the citizens about this problem before vultures become extinct in the wild.

Table 1. Vulture numbers recorded since 2010 to 2014 from the BPM Programme data

	Number recorded per year					Total no.
Species name	**2010**	**2011**	**2012**	**2013**	**2014**	**All**
White backed Vulture	82	222	504	100	238	1146
Cape Vulture	8	12	382	12	69	483
Lappet-faced Vulture	4	11	30	2	8	55
Hooded Vulture	0	6	17	3	3	29
White-headed Vulture	1	0	0	0	2	3
Egyptian Vulture	0	0	0	0	0	0

[1] If interested in the methodology used to develop these plots, email education@birdlifebotswana.org.bw

Common Myna records in Botswana

In the year 2000, Common Mynas were listed by the World Conservation Union (IUCN) as one of the World's 100 Worst Invasive Species. The Common Myna has adapted well to the urban environment, making it one of the most abundant and familiar birds. In this report, we do basic exploration of the BPM dataset, asking whether this bird's range and distribution has changed since the programme's establishment in 2010. From the BPM dataset, the Common Myna is more frequently reported in the southeast and central district, but the bird seems to be spreading throughout the country (Figure 2, Table 1). Common Mynas are accomplished mimics and can learn to talk. For this reason mynas have been taken to many parts of the world as cage birds. In India, where the Common Myna originated, it is called the "Farmer's Friend" because it eats insects that destroy crop plants. The species can be of an economic problem because they damage fruit and grain crops and their noise and smell can be annoying where they are in large numbers. Mynas can also spread mites and they have the potential to spread disease to people and domestic animals. Mynas become quite fearless of people if they are not hassled and can be a problem in outdoor-eating areas by stealing food off people's plates. Perhaps the Common Myna's most serious crime is that it is thought to compete aggressively with native wildlife for nesting hollows. Common Mynas nest in tree hollows, or places like them, such as holes in roofs. Hollows are in short supply because of clearing for developments and agriculture, and now mynas are thought to negatively impact native species such as hoopoes, hornbills, starlings and woodpeckers through fighting for hollows with them and destroying their eggs and chicks and stopping them from breeding. In view of the above, there is need for increased monitoring of this species, and concurrent systematic research to assess and quantify the impacts that mynas are thought to have on native species. If you want to explore this matter further, contact BirdLife Botswana for a possible collaborative project.

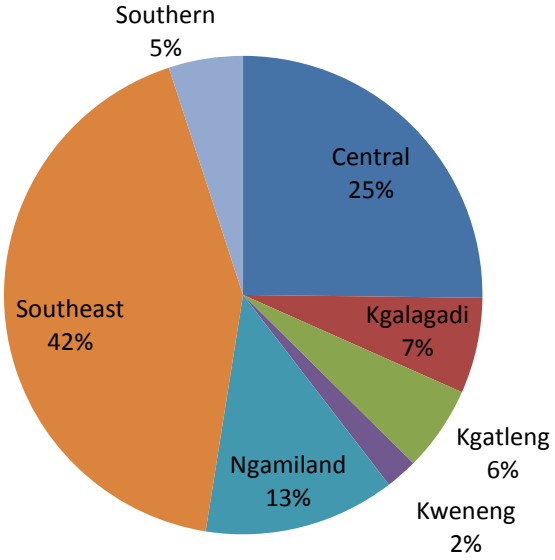

Figure 2: Common Myna BPM records per district in Botswana

Table 2. Common Myna records

Year	Total no. recorded	Place of records
2010	7	Gaborone-Ruretse, Lobatse-Morokwe Farm, Mahalapye, Molepolole
2011	23	Mahalapye, Mannyelanong Game Reserve, Gaborone Game Reserve, Lobatse-Morokwe Farm, Oodi-Ruretse, Mogobane
2012	41	Mahalapye, Oxford Farm Kgalagadi, Gaborone Game Reserve, Southern Sua Pan-Mosu, Tlokweng, Oodi-Ruretse, Polokwe, Sentlhane-Open Bushland-Notwane
2013	40	Moremi Conservation Trust, Gaborone Game Reserve, Lobatse –Morokwefarm, Mogobane, Oodi-Ruretse, Mahalapye, Gamodubu
2014	28	Mmantshumo-Lekhubu-Island, Southern Sua Pan-Mosu, Tlokweng, Mogobane, Gaborone Game Reserve 1

Red-billed Quelea records

Figure 3 shows the BPM records of the Red-billed Quelea for Botswana for the period 2010 to 2014. Quelea is more frequently encountered in northern parts of Botswana. Figure 3 demonstrates the value that the BPM could provide to quelea control measures: for instance, knowing where the birds are typically encountered in large numbers means we can now advise the Ministry of Agriculture to better target their control programmes. The Red-billed Quelea (*Quelea quelea*) is the world's most abundant wild bird species, with an estimated adult breeding population of 1.5 billion pairs; some estimates of the overall population have been as large as 10 billion. With nesting colonies reported in the millions, one can imagine the food that these birds consume. Red-billed Quelea are capable of destroying entire crops, over areas up to 1,000 ha. It is important to note, however, that other habitat requirements, such as the availability of food, will influence range and abundance. If they happen to nest near your crops, the impact could be disastrous. It is no surprise therefore, that governments and farmers across Botswana control these birds. For more background information on the Red-billed Quelea see the text box below.

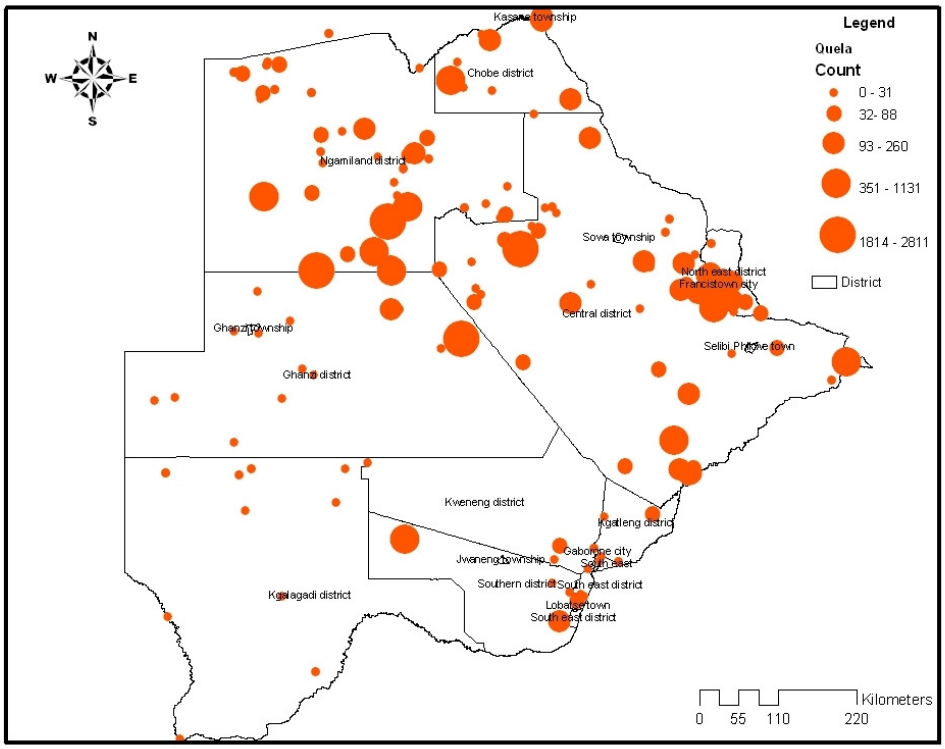

Figure 3. Map of quelea records from the BPM for period 2010 to 2014

Text box 1. Some interesting facts on quelea

An individual quelea consumes an average of 18 grams of grain per day. It is not unusual for flocks to number into the millions, so a flock of 2 million birds can eat up to 50 tonnes of grain in a day, or 1,500 tonnes within 30 days. Quelea can move 48–64 km in a single day to feed and then return to their roost at night. With the introduction of modern, large-scale agriculture (i.e. cereal crops, cattle feedlots, large dams with reedbeds that provide suitable breeding sites) large areas of highly favourable habitat have been created, supporting a dramatic increase in quelea abundance. In parts of Africa, quelea numbers have increased 10–100 times since the 1970s. In agricultural areas, quelea has also become less migratory, in response to a year-round food source. Since preferred grass species are annuals, quelea has developed a migratory strategy to ensure year-round feeding. By eating intensively, quelea can gain sufficient weight to allow migration to new feeding areas. With the first rains, quelea migrates to dry areas that still have ungerminated grass seeds. As the rain-front progresses, birds move ahead and continue feeding in dry areas with grass seeds. When all dry areas have received rain, they migrate back to the first area that received rain—by that time, the grass seeds have germinated and produced more seeds. If the season is favourable, they will move to new areas, starting a new breeding cycle each time (Cheke et al. 2007).

Participants and transects

The existence of the BPM data depends on the number of participants and the number of transects and their distribution through the country. For the programme to grow and to be sustainable it is dependent on the volunteers across the country to pledge a long term commitment to data contribution. There is a reputable number of about 170 loyal volunteers who have been repeating their transects without missing any counting period. Overall, the number of transects and participants has been fluctuating, caused by changes during the counting period whereby some people do not repeat their transects. The graph and figure below shows the fluctuation on the number of participants and the number of transects. It also worth mentioning that some transects are being started in areas where access is limited for other people and when the participant relocate it becomes very difficult to replace the person in that area. Overall, the trends shown are really encouraging, given that there is no other citizen-scientist based scheme in the country! We should all take pride in the growth of the BPM, which is a trend-setter for the country!

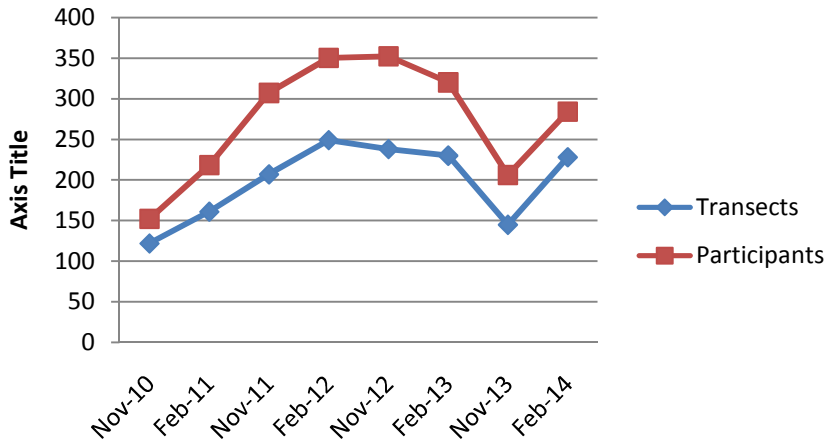

Figure 4. Number of participants and transects

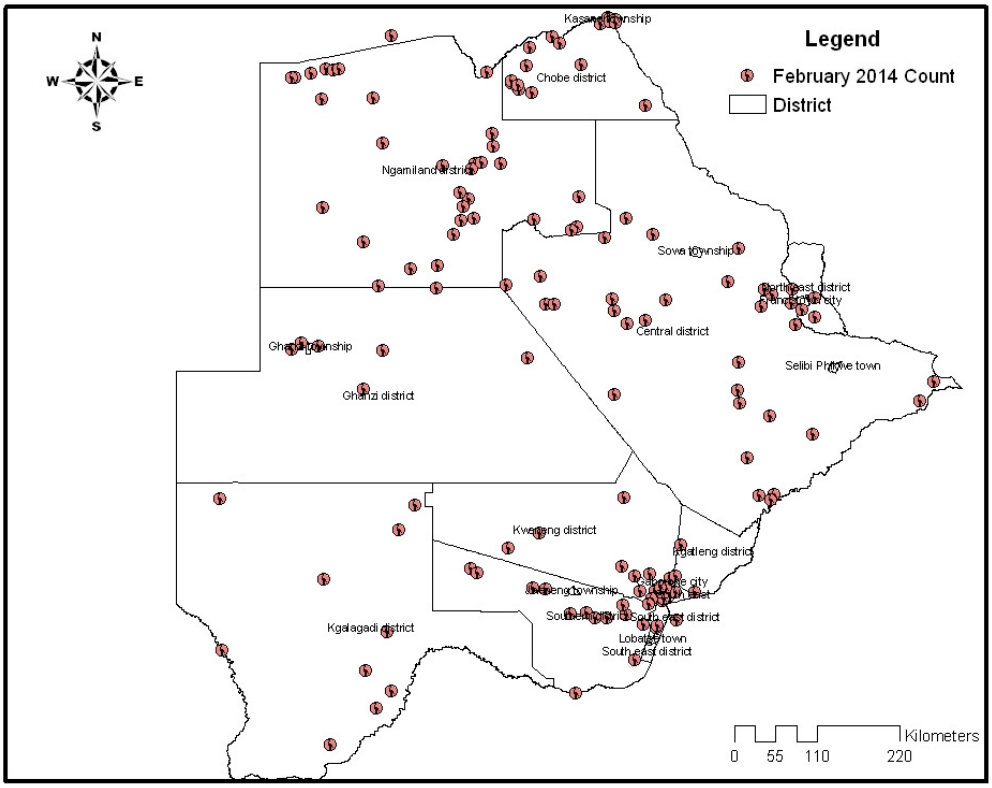

Figure 5. Transects coverage after the February 2014 count

Species reported less frequently than expected

One of the BPM programme's aim is to monitor common widespread species to see whether the population number of the species is increasing or decreasing. The population trends derived from the programme will be used to develop a wild bird indicator to measure the efficiency of conservation actions for those species and the environment and to provide baseline data for future work. On the BPM data there are still some species for which records are insufficient, despite that there species can otherwise be expected to be more common and widespread. Table 5 below shows some species that seem to be under-recorded, given the BPM's coverage of approximately 200 transects repeated eight times since 2010; these species likely being missed, or being misidentified, during the transects visits. To address this situation, BirdLife Botswana recently produced a leaflet on 'hard to identify species' aimed at assisting counters to identify some of the species on the table below. Participants are urged to use the guide to help improve identification skills. The BPM team is also available to assist should you have any enquiry relating to bird identification.

Table 5. Common and widespread under-recorded and or misidentified species

Species	**Number of records per year**				
	2010	**2011**	**2012**	**2013**	**2014**
Golden-tailed Woodpecker	**7**	**9**	**17**	**13**	**10**
Bearded Woodpecker	**10**	**14**	**32**	**4**	**9**
Cardinal Woodpecker	**15**	**54**	**136**	**6**	**46**
Barred Wren-Warbler (Southern Barred Warbler)	**15**	**20**	**65**	**9**	**22**
Icterine Warbler	**3**	**66**	**5**	**1**	**10**
Olive Tree Warbler	**1**	**4**	**7**	**3**	**5**
Chat Flycatcher	**3**	**12**	**39**	**5**	**22**
Red-capped Lark	**5**	**20**	**9**	**2**	**14**
Burnt-necked Eremomela	**3**	**4**	**17**	**2**	**5**
Fawn Colored Lark	**76**	**134**	**123**	**16**	**53**

Challenges: Strange species record from the BPM dataset

There are re-occurring strange records of bird species on the BPM dataset. These show that there is still a problem of bird misidentification; for instance, there was a submission of 570 Black-winged Pratincole (a waterbird) for the February 2014 count, which made it one of the most common species on the basis of number of individuals recorded. In fact, there are many records of waterbirds submitted; about 8% on each count period. We remind counters that the BPM scheme monitors landbirds only, so submissions should not include any waterbird. Table 6 shows some of the odd records for terrestrial species reported to us; these are samples from just two counts, February and November 2014, and they have been deleted from the BPM dataset.

Table 6. Samples of odd records during transects visits for the November 2013 and February 2014

Species	**Number recorded**	**Notes**
Crested Guineafowl	63	Crested Guineafowl has been recorded once in Botswana from Kubu Lodge Kasane. It is not found in Botswana but found in neighboring countries Zimbabwe, South Africa and Mozambique. There are only two species of guinea fowl in the world, the one common and widespread in Botswana is Helmeted Guineafowl.
Cape Bunting	9	Has been recorded once in Botswana and it is also not found in Botswana, mistaken with the Long-tailed Paradise-Whydah.
European Turtle-Dove	3	Have been recorded once in Botswana and Found in West Africa across Europe; mistaken with Cape Turtle Dove
Cape Batis	5	Only one record made once in Botswana, found in South Africa, can be mistaken with Chinspot Batis or Pririt Batis
Grey Plover	10	This is wader/shore bird and not expected to be see numerously in a BPM count unless the transect is on wetland which should not be so.
Melodius Lark	7	Found only in high veld grassland in South Africa and rare and hardly occurs in Botswana.
Bokmakierie	6	Can be rarely seen in southeast of Botswana but is found in South Africa
Angola Swallow	3	One record in Southern Africa; found in north Africa and can be confused with Barn Swallow

Lastly, Participants are still not recording their official transects name and codes. Before each counting period transects names and codes are shared with counters with an expectation that this problem will not appear.